## REMARKS

This amendment is in response to a non-final Office action (Paper No. 13) mailed 27 August 2003. Upon entry of this amendment, claims 1-5, 7 and 9-43 will be pending in this application. Applicant has newly added claims 35-43 by this amendment.

In Paper No. 13, the Examiner has rejected all of Applicant's claims 1-5, 7 and 9-34 under 35 U.S.C. 103 (a) as being unpatentable over previously applied U.S. Patent No. 5,481,183 to Johnson *et al.* in view of newly cited U.S. Patent No. 5,347,525 to Faris. Applicant has the following comments:

### 1. Summary of Applicant's Invention

Applicant's invention pertains to monitoring the presence and intensity of each spectral component in a multiplexed WDM signal made up of a plurality of multiplexed optical signals of different frequencies. Applicant's invention causes the WDM signal to become unfocused so as to span a continuous range of angles of about 10 degrees. This spanned beam impinges on an etalon that passes a certain frequency based on the incident angle. An array of detectors are positioned at the back side of the etalon to monitor the presence and the intensity of each spectral component in a WDM optical signal. Applicant's invention involves multiplexing and demultiplexing but does not involve modulation of a signal on a carrier signal.

**2. Summary of Johnson '183**

Johnson '183 is a spectrum analyzer that analyzes an RF signal modulated onto a laser optical carrier signal. An etalon 13 is used to separate the spectral components and the video camera is used to detect the split up frequency components. Johnson '183 does not pertain to multiplexing or demultiplexing of optical signals and Johnson '183 does not pertain to WDM of optical signals. Instead, Johnson '183 analyzes the spectral components of a modulated singal on a single carrier frequency, and etalon 13 of Johnson '183 does not analyze a multiplexed beam.

**3. Summary of Faris '525**

Faris '525 pertains to an optic multi channel communication system. In this communication system, a plurality of modes of a laser are multiplexed and demultiplexed. Each optical mode carries a signal modulated thereon. Each mode is one of a plurality of carrier frequencies. Each carrier frequency is stabilized via mode locking. Mode locking may use an etalon and detector combination to mode lock a particular mode. Therefore, Faris '525 does not have a detector array that detects the presence and intensity of many multiplexed optical signals as in Applicant's invention. No multiplexed or WDM signal in Faris '525 impinges on an etalon. Instead, the etalons of Faris '525 analyzes a single channel of a demultiplexed optical signal.

**4. If Faris '525 were combined with Johnson '183 according to Paper No. 13, Applicant's invention would not result**

In Paper No. 13, the Examiner used Faris '525 to fill in for the deficiencies of Johnson

'183. In particular, in Paper No. 13, the Examiner substitutes the electro optic modulators 67 of Faris '525 for the RF modulator 5 in Johnson '183. Also, the Examiner substitutes the laser source of Faris '525 for the single optical carrier source in Johnson '183 to arrive at Applicant's claimed invention. Applicant disagrees. Applicant submits that if the e/o modulator 67 were put in place of RF modulator 5 in FIG. 1 of Johnson '183 and if a WDM source were put in place or laser source 1 of FIG. 1 of Johnson '183, Applicant's invention would not result. This is because the etalon 13 of Johnson '183 is configured to handle a very narrow range of frequencies. Thus, if multiplexed WDM light illuminated the etalon 13 of Johnson '183, at most, only one channel would pass through the etalon 13, and at most, only channel would be detected by the video camera 17. However, this is not Applicant's invention. Applicant's invention includes an etalon and an array of detectors to detect and determine the intensity of all the multiplexed channels in a WDM signal simultaneously, not to detect the presence of just one channel. Therefore, Applicant submits that if Faris '525 were combined with Johnson '183 as done by the Examiner in paragraph 2 of Paper No. 13, Applicant's invention would not result.

**5. The combination of Faris '525 and Johnson '183 would not result in Applicant's invention**

Applicant further submits that even if Faris '525 were combinable with Johnson '183, Applicant's claimed invention would not result. Applicant's etalon and detectors detect a plurality of multiplexed signals simultaneously. In Johnson, since only one carrier frequency is analyzed by etalon 13, etalon 13 passes only a very small range of frequencies compared to Applicant's

etalon. Similarly, the etalon of Faris '525 analyzes only a single carrier frequency or a single mode of a laser in order to mode lock the single mode. Thus, neither Johnson '183 nor Faris '525 use an etalon tp split up a multiplexed optical signal or a WDM optical signal as is done by Applicant. Unlike the applied prior art of paper No. 13, Applicant's etalon passes a very wide range of frequencies, the range being so wide that the etalon of Applicant's invention analyzes a plurality of carrier frequencies (or a multiplexed optical signal) at once. Applicant further submits that the concept of analyzing all of the carrier frequencies of a multiplexed optical signal at once using a single etalon is novel and is not present in the prior art. Since neither Johnson '183 nor Faris '525 disclose an etalon used to analyze a multiplexed or WDM optical signal having many different carrier optical frequencies, Applicant submits that even if Johnson '183 were combinable with Faris '525, Applicant's claimed invention would not result.

**6. Faris '525 does not teach an etalon monitoring a WDM signal as alleged by the Examiner in Paper No. 13**

In Paragraphs 2 and 4 of Paper No. 13, the Examiner states that Faris '525 teaches monitoring a WDM signal using an etalon. Applicant disagrees. Applicant submits that the etalon in Fairs '525 does not monitor a WDM signal. This is because the optical signal in Faris '525 is demultiplexed before impinging on an etalon. Then, after demultiplexing, only one optical channel or one carrier frequency impinges on an etalon in Faris '525. Therefore there is no WDM signal monitoring in Faris '525 as alleged by the Examiner throughout Paper No. 13. WDM means wavelength division *multiplexing*. However, if the WDM signal is demultiplexed as in Faris '525,

and only one channel is analyzed by an etalon, then the etalon is not analyzing a WDM signal as alleged by the Examiner. This mischaracterization by the Examiner in Paper No. 13 is critical because Applicant does analyze a WDM signal with a single etalon, making Applicant's claimed invention novel over the applied prior art. Applicant does not demultiplex the WDM signal prior to analysis as does Faris '525. Applicant does not use a plurality of etalons, one for each channel of a WDM signal as Faris '525 indicates. Therefore, this mischaracterization of Faris '525 by the Examiner in Paper No. 13 is critical and erroneous.

**7. Contrary to the Examiner's assertion in Paper No. 13, Johnson '183 does positively identify the dimensions and parameters of Etalon 13**

In Paper No. 13, the Examiner states at the bottom of page 5 that Johnson '183 does not disclose the dimensions and ranges of the etalon as claimed. Applicant disagrees. Applicant submits that the dimensions and ranges of etalon 13 of Johnson '183 are either disclosed or easily derivable as explained in Applicant's amendment filed on June 18, 2003 in response to Paper No. 8.

In Applicant's amendment filed on June 18, 2003, Applicant indicated to the Examiner that the construction of the etalon of Applicant's invention was in an order of about 1000 times different than etalon 13 of Johnson '183. For example, Applicant noted that Applicant's etalon was 28.6 microns thick while etalon 13 of Johnson '183 was 8mm thick, the FSR of Applicant's etalon was 30 nm while the FSR of etalon 13 of Johnson was 0.02871 nm.

**8. Applicant's etalon is not an obvious modification of Johnson's or Faris' etalons**

The Examiner responded to the above numbers comparison argument by stating, in Paper No. 13, that these logarithmic differences between Applicant's etalon and etalon 13 of Johnson '183 do not make Applicant's etalon novel over Johnson '183 explaining that "Discovery of an optimum value of a result effective variable or optimum range is within the skill of the art". Applicant disagrees. Applicant submits that a 28.6 micron thick etalon is not an optimum range for an 8 mm thick etalon. This logarithmic difference also cannot be said to be within the optimum or workable ranges by routine experimentation. Applicant submits that a much thinner etalon results in less resonating and less interference and thus unexpected results. Applicant further submits that there is no etalon in the applied prior art that analyzes a multiplexed WDM beam as done by Applicant. Applicant submits that using an etalon to analyze a signal of a single demultiplexed beam is unrelated to analyzing all of the channels of a WDM beam by a single etalon. Applicant submits that such a logarithmic change in parameters of the etalon along with the entirely different use of the etalon does not make Applicant's etalon within routine experimental range of Johnson's etalon. Such logarithmic changes in parameters cannot be considered optimization as characterized by the Examiner in Paper No. 13. This is because Applicant's etalon is being used for an entirely different purpose than the etalons of the applied prior art and have differences of $\mathbf{10^3}$ from the applied prior art etalons.

**9. Newly added claims 35-43**

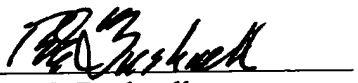
Applicant has newly added claims 35-43 by this amendment. These claims claim features

not taught or suggested by the applied prior art. These features include the absence of a demultiplexer or the absence of demultiplexing the WDM optical signal prior to impinging on the etalon, the fact that the etalon passes more than one optical channel, that the array of detectors detect more than one optical channel of the WDM, and that the array of detectors detect a range of optical wavelength of more than 10nm. Entry of and favorable examination of these claims is respectfully requested.

A fee of $162.00 is incurred by the addition of nine (9) more claims in excess of 20. Applicant's check drawn to the order of Commissioner accompanies this Response. Should the check become lost, be deficient in payment, or should other fees be incurred, the Commissioner is authorized to charge Deposit Account No. 02-4943 of Applicant's undersigned attorney in the amount of such fees.

In view of the above, all claims are deemed to be allowable and this application is believed to be in condition to be passed to issue. Reconsideration of the rejections and objections is requested. Should any questions remain unresolved, the Examiner is requested to telephone Applicant's attorney.

Respectfully submitted,



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